Barriers to Utilization of Health Facilities for Delivery in Kenya

By

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Abstract

Background

Access to and use of adequate maternal care services, including both antenatal care and skilled attendance at birth, is essential to reduce both maternal and neonatal mortality. However, the utilization of skilled care or facility delivery has remained so low in Kenya despite increased use of antenatal and postnatal care. This paper examines major reasons for non use of facility delivery in Kenya.

Methods

The study used data from 2008/09 Kenya Demographic and Health Survey (KDHS). Both bivariate and multivariate analysis was used. Binary logistic regression was used for modeling the three dependent variables used to measure reasons for non use of facility delivery: economic, facility and culture/attitude related reasons. All estimates incorporated the survey sampling design and the weighting used by the KDHS.

Results

Results suggest that most of the reasons is due to infrastructure, cost of services and to some extent culture. Regional differences appear significant in determining all the three reasons for non use of facility delivery in Kenya. The cultural related reasons are also related to age, education and marital status. Elderly women, women with higher education or those who were formerly married less likely to state the cultural reasons as a barrier to use of facility during delivery

Conclusion

Economic related reason is an important reason for not delivering at health facilities in many regions in Kenya. However, a significant proportion of women cited the lack of service availability, and social and cultural barriers as the major causes of not delivering at a health facility. To improve utilization of maternal health services, economic incentives such as free maternity services need to be tempered with programs aimed at improving the health systems and removing the social and cultural barriers. Furthermore, there is a need for improving women's knowledge about obstetric risks, since a significant proportion of women consider that the delivery at a health facility is not necessary.

Key words: Maternal Health, antenatal care, skilled delivery, Kenya

Background

Reproductive health (RH) is defined as a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity, in all matters relating to the reproductive system and to its functions and processes[1]. The Reproductive health definition implies two rights: a) the rights of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods of their choice for regulation of fertility which are not against the law and; b) the right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant [1]. The extent to which couples can exercise their reproductive rights determines to a large extent, the reproductive health status of the population. Infant and under-five mortality and maternal mortality are regarded as the best expression of the reproductive health status of the population.

Reports by the World Health Organization (WHO) estimates in 2010 show that the annual number of women dying from pregnancy-related complications is still high in sub-Saharan Africa [2]. Indicators of maternal deaths are unlikely to be achieved by 2015. Many governments in the region have put efforts to promote women's health and safe motherhood; to achieve a rapid and substantial reduction in maternal mortality and reduce the differences observed between developing and developed countries and within countries. All countries should strive to make reproductive health accessible through the primary health-care system to all individuals of appropriate age. Consequently, the Government of Kenya through the Ministries of Health implemented both the National Road Map for accelerating the attainment of the Millennium development goals (MDGs) related to maternal and new born health program of 2010 and the National Reproductive Health Strategy 2009 -2015 in order to improve maternal health, increase safe deliveries, and reduce infant and maternal mortality and morbidity [3, 4].

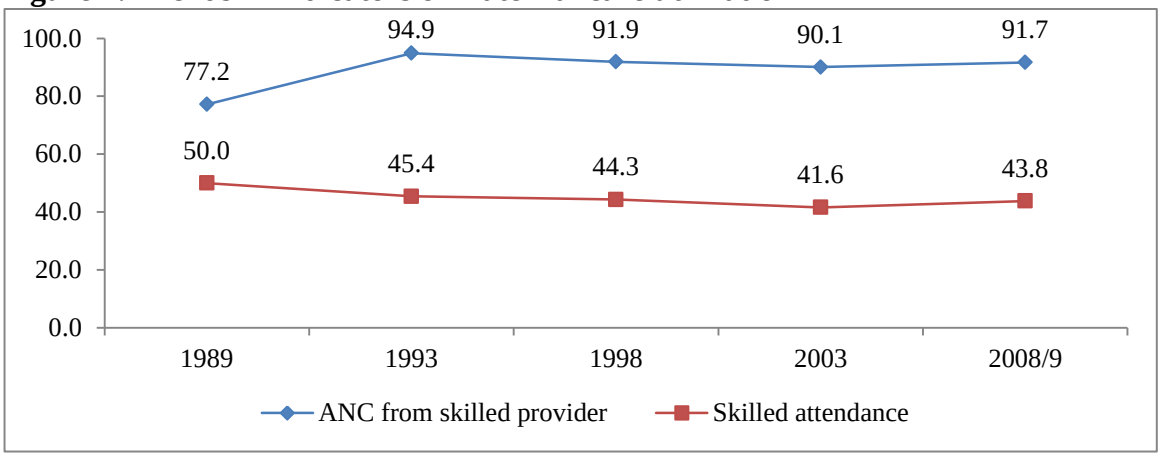
Kenya has made significant progress in the reduction of child mortality; However, maternal mortality remain high with maternal mortality ratio ranging from 333 and 643 maternal deaths for every 100,000 live births in the last decade [5]. Also, there are wide regional disparities. The level of MMR ranges from slightly over 200 in some parts of the country to over 2000 in the arid and semi-arid parts of the country. This level of maternal mortality ratio (MMR) implies that slightly over 7000 women of reproductive age die every year due to pregnancy-related conditions. Hence, attainment of

the Millennium Development Goal (MDG) no. 5 – Improved Maternal Health – is highly unlikely.

In recent decades, many strategies have been implemented to improve maternal health outcomes. Many programs are aimed at reducing delays in seeking care include: improving primary prevention through education and services; developing secondary prevention through early detection and treatment of conditions; and advancing tertiary prevention through treatment of conditions to reduce case fatality[6]. Other programs have focused on providing economic incentive with the assumption that the huge inequality in maternal health care utilization in the poorer segment of women is primarily due to economic barriers to accessing care[7]. In Kenya, the government implemented an output-based approach (OBA) - a health financing strategy that addresses both supply- and demand-side elements to reduce financial barriers to accessing key health services [8].

Access to and use of adequate maternal care services, including both antenatal (ANC) and skilled attendance at birth, is essential to reduce both maternal and neonatal mortality [9, 10]. Most current deaths could be avoided if only known medical interventions were available and accessible to the population in need. There is a strong positive correlation between skilled attendance at birth, and lower maternal and neonatal death [10-13]. The Kenyan Government has in place many strategies to increase access to health services. However, use of maternal and child health services remains at low levels. Figure 1 highlight trends in the utilization of maternal healthcare services. Skilled attendance at birth has been identified as the single most important factor in preventing maternal deaths [12] and as an important element in reducing neonatal death [11, 13]. However, a question still being asked is why the utilization of skilled care has or facility delivery remained so low in Kenya despite increased use of antenatal care ANC and postnatal care (PNC) services. The focus of this paper is to examine which factors can best predict the main reason for none facility delivery in Kenya.

Figure 1: Trends in indicators of maternal care utilization



Source: KNBS, and ICF Macro, 2010

Methods

Source of data

The findings of this analysis are based on data from the 2008/09 Kenya Demographic and Health Survey (KDHS). The 2008/9 KDHS is a nationally representative sample survey of 8,444 women age 15 to 49 and 3,465 men age 15 to 54 selected from 400 sample points (clusters) throughout Kenya. The survey utilized a two-stage sample based on the 1999 Kenya Population and Housing Census and was designed to produce separate estimates for key indicators for each of the eight provinces in Kenya. The KDHS data collection procedures were approved by the ICF Macro (Calverton, Maryland), Institutional Review Board and the Scientific and Ethical Review Committee of the Kenya Medical Research Institute (KEMRI) [5]. All respondents are required to consent before participating in the study. Data from KDHS is publicly available, therefore, there no further ethical approval was required.

Dependent variables

In the DHS, women as usually ask the place of delivery for every birth that occurred within the last five year preceding the survey year. Those women who gave birth in places other than a health facility are further asked reasons for not delivering in a health facility. From responses to the subsidiary question of *the 'main reason for none facility delivery'* we group them into three categories; economic related reasons, facility related reasons and culture/attitude related reasons based on a framework adopted by Gabrysch et al. [14]. Studies show that these factors may

influence the use of delivery care at the community and individual level [14, 15]. Economic related reasons include cost, facility too far or no transport. Facility related reasons include responses such as facility not open, respondent do not trust facility and no female provider and abrupt delivery while the cultural/attitude related reason were husband/family refused, not customary and not necessary.

Independent variables

The choice of the independent variables to include in the analysis is informed by published literature on factors that have the potential to influence place of delivery. Our literature search was restricted to factors that may influence home delivery. The region, place of residence, wealth index, mother level of education, age, parity and socio-cultural factors have the potential to influence the choice of place of delivery [14, 16]. Region refers to the eight administrative provinces that existed before Kenya promulgated a new constitution in 2010. Place of residence refers to rural verses urban residence. The wealth index is a proxy measure for the long-term standard of living of the household. It is computed using data on the household's ownership of consumer goods; dwelling characteristics; type of drinking water source; toilet facilities; and other characteristics that relate to a household's socioeconomic status. The index is constructed using principal component analysis (PCA) method as explained in [17]. Education is a major predictor of the lifestyle and status an individual enjoys in a society. Studies have consistently shown that educational attainment has a strong positive effect on health behaviors and attitudes [18, 19].

Mother age at birth and parity are socio-demographic determinants for the place of delivery. Mrisho et al. [16] noted that older women tend to deliver home than young women since the latter have no experience in childbirths and they tend to fear complications related to pregnancy and child birth. Studies also show that antenatal care attendance influence facility-based delivery[20]. Women who do not attend any antenatal clinic is more likely to deliver at home. In this study, the number of ANC visits was categorized into three; nine, 1-3 visits and 4 or more visits. Socio-cultural factors may also influence decision-making on whether to seek care. Elements such as perceived quality of care, personal experience with health system greatly influence the decision on whether a mother would deliver at a health facility[21]. In this study,

we use religion to capture cultural factors. We categorize religion into; Catholics, Protestant, Muslim and Others which includes no religion.

Statistical Analysis

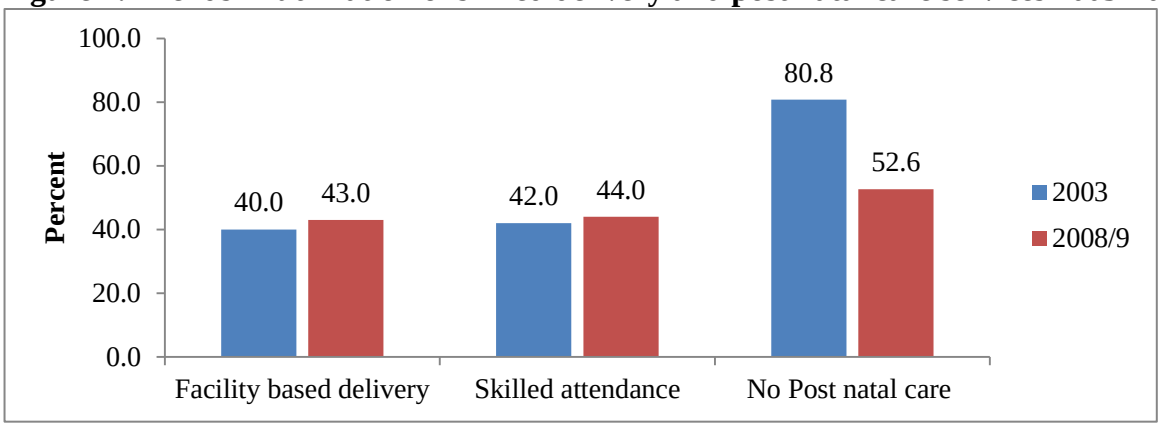
We use bivariate and multivariate analysis to examine major reasons for none facility delivery. Cross-tabulation with chi-square test was used to determine the association between reason for none facility delivery and background characteristics. We then run a multivariate logistic regression models to examine factors associated with reasons for nonuse of a facility for delivery. Only variables that were found to be statistically associated with reason for none facility delivery ($p < 0.01$) were included in the multivariate model. The study runs a separate regression for the three categories of reasons for none use of health facility for delivery. The 2008-09 KDHS used a two-stage sampling design in which the first stage involved selection of 400 clusters stratified by residence (urban and rural) and a systematic sampling of households in the second stage. All estimates incorporated the survey sampling design and the weighting used by the KDHS. We used a procedure of survey data analysis in Stata software to take into account the differences between the sample designs and to obtain corrected standard errors as explained by[22, 23]. Given the size of our sub sample (births to in the last five years prior to survey) for our analysis and the computed design effect (see KDHS report 2008/9) we assume that our analysis has at least 80 % power to identify at 5% significant level to detect the differences between the groups.

Results

Levels of utilization of selected maternal health services

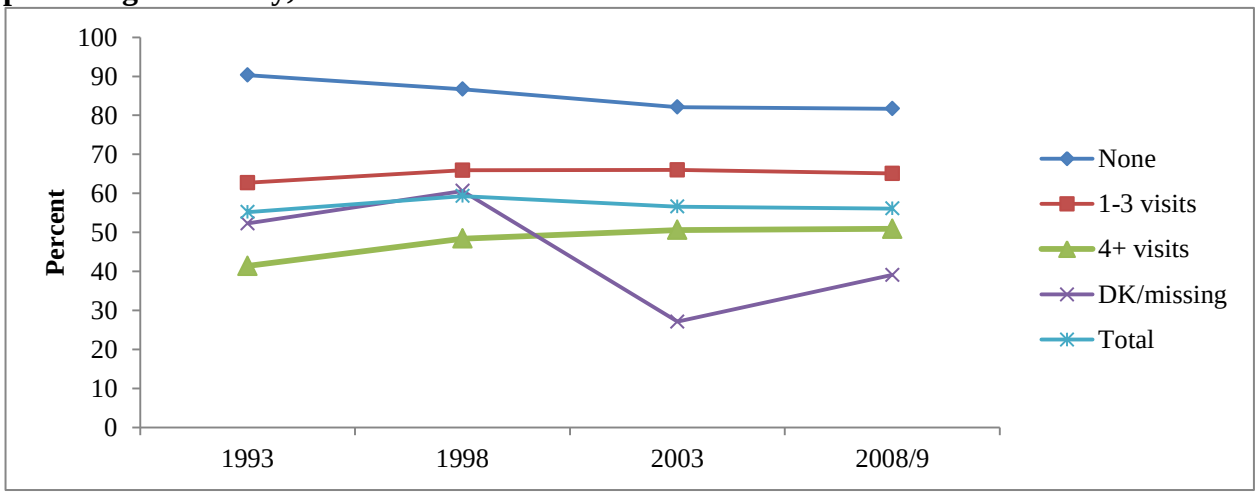
Antenatal and delivery care are both critical for maternal and newborn health. However, utilization of skilled attendance during delivery has remained low compared to other interventions. Figure 2 shows little improvement facility-based delivery and skill birth attendance during the 2003-2008/9 period. On a positive note, the proportion of women with no postnatal care dropped by over 28 percent.

Figure 2: Trends in utilization of skilled delivery and post natal care services 2003-2008



A woman's perceived value of care often influences her decision to seek care while the value she places on receiving prenatal care may differ from the value she ascribes to delivery care [24] However, there appear some linkages between utilization of ANC services with the likelihood of not delivering in a facility (see figure 3). Women who do not have any visit are more likely not to deliver in a health facility, and the trend has not changed much over the years. In contrast, those who have four or more visits are less likely deliver at home, and the proportion of women who utilize ANC but continue to deliver at home is declining.

Figure 3: Trends in home deliveries by ANC visits among live births in the last three years preceding the survey,



Differentials in Place of delivery

Table 1 shows the distribution of respondents by place of delivery. About 57 percent of respondents delivered at home while only 42 percent delivered in a health facility. Regions where facility delivery is high also tend to have higher proportion deliver in private facilities. The same applies to rural-urban divide. Other than regional differences, women of lower socio

economic strata tend deliver at home .The richer also tend to dominate the use of public facilities that are highly subsidized. Younger women are more likely to deliver at a health facility [5, 25]. The distribution tends to show that low utilization of facility delivery might be due to cost, the relative distribution of facilities in the regions as most facilities are in urban centers.

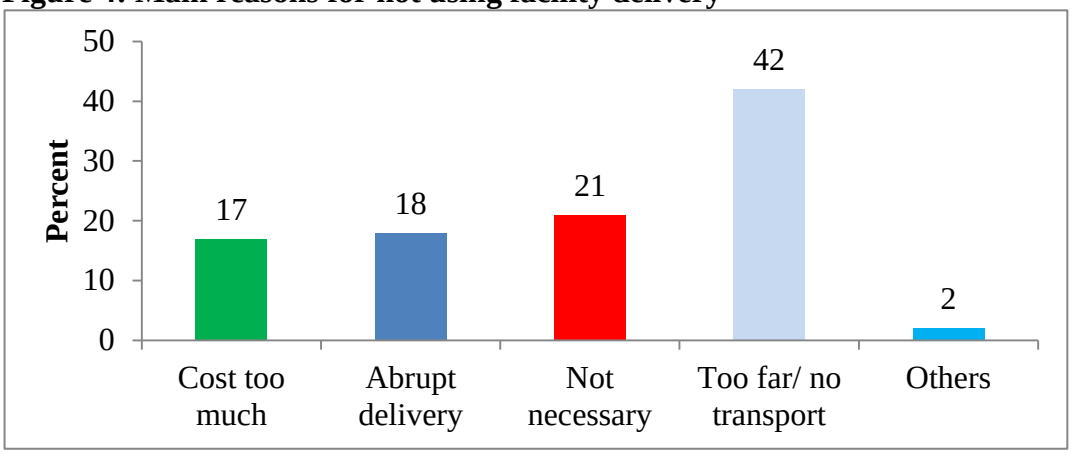
Table 1: Percent Distribution of Respondents by place of delivery, KDHS 2008/09

	Place of delivery			
Characteristic	**Home**	**Public facility**	**Private facility**	**Number**
Region				
Nairobi	12%	40%	48%	411
Central	27%	59%	14%	495
Coast	58%	35%	7%	880
Eastern	58%	32%	9%	742
Nyanza	56%	36%	8%	1109
Rift Valley	68%	26%	7%	1056
Western	70%	22%	8%	786
N Eastern	81%	18%	1%	574
Place of Residence				
Urban	26%	50%	24%	1457
Rural	67%	27%	6%	4596
Marital status				
Never	48%	41%	11%	382
currently	58%	31%	11%	5157
formerly	59%	35%	6%	514
Level of education				
None	85%	14%	2%	1287
primary	60%	32%	8%	3422
Sec+	24%	50%	26%	1344
Religion				
Catholic	53%	34%	14%	1062
pro	53%	36%	11%	3531
Muslim	72%	23%	5%	1198
other	75%	15%	10%	262
Age				
15-24	56%	36%	9%	2064
25-34	56%	32%	11%	2837
35+	64%	25%	11%	1152
Wealth Index				
Poorest	85%	14%	1%	1767
poorer	69%	25%	6%	1077
Middle	57%	38%	6%	981
richer	45%	43%	11%	983
richest	19%	51%	30%	1245
Kenya	57%	32%	10%	
Number	**3477**	**1946**	**630**	**6053**

Reasons for Not using Facility Delivery

Figure 4 shows the major reasons for not using a health facility at the time of delivery among women who delivered outside a facility. Among the 2113 women who gave reasons for not delivering in a health facility, the majority (42%) cited lack of transport or facility being too far. One in every five women considers the use of a facility as not being necessary. For having to take transport, there is a large disparity between poor and wealthy women. Only 26 percent of women in the highest wealth quintile cited this as a problem, compared with 49 percent of the poorest women (data not shown). It is also important to note that only 2 percent cited poor quality service while about 3 percent cited not customary, or the spouse did not allow.

Figure 4: Main reasons for not using facility delivery



The reasons for non-use were re-grouped into three main categories, economic related (cost, facility being too far or lack of transport), facility related (facilities not open lack of trust or no female provider) and cultural related (husband family opposition, not customary, not necessary and abrupt delivery). The economic reasons entail both supply and demand factors while facility imply structural or systems factors, the last group is individual or family related. Table 2 presents the association between woman background characteristics and reasons for not delivering at the health facility.

Overall, the main reasons for the non-use of a facility for delivery appear to be economic factors-mainly cost of service and transportation to the facility followed by culturally related reasons. The region, level of education, wealth quintile, religion and number of antenatal care visits are significantly associated with reasons for none facility delivery (p value ≤ 0.000). Marital status also has a significant relationship with reasons for none facility delivery.

The relationship between the antenatal care visit and reasons for non-facility delivery is also significant. The result shows main reasons behind non-use of facility for delivery among women who attend ANC is more of economic than cultural motives but fail to deliver at a health facility. Contrary to the expectation, the study did not find a significant association between reasons for none facility delivery with both place of residence and parity.

Table 2: Percent Distribution of respondent by reason for not using facility for delivery

	Reasons for not delivering at a health facility				Total
Region	**Economic**	**Facility**	**Cultural**	**P-Value**	
Nairobi	61.9	26.2	11.9		42
Central	53.1	24.0	22.9		96
Coast	39.0	21.0	40.0	0.000	310
Eastern	63.5	19.2	17.3		266
Nyanza	56.0	31.2	12.8		375
Rift Valley	50.4	14.6	35.0		446
Western	58.4	18.4	23.2		332
Northeastern	40.7	37.8	21.5		246
Residence					
Urban	51.7	22.3	26.0	0.571	265
Rural	51.9	23.1	25.0		1848
Education					
No education	48.5	22.0	29.6		615
Primary	52.8	22.8	24.3	0.006	1270
Secondary +	55.7	26.8	17.5		228
Wealth Quintiles					
Poorest	51.6	22.6	25.8		853
Poorer	52.1	23.7	24.2	0.000	443
Middle	52.3	20.3	27.4		350
Richer	53.6	23.9	22.5		289
Richest	48.9	27.0	24.2		178
Marital status					
Never married	58.5	15.1	26.4		159
Currently married	50.3	24.0	25.7	0.009	1749
Formerly married	60.0	21.0	19.0		205
Religion					
Rom. Catholic	58.9	19.7	21.4		355
Protestant	54.2	22.4	23.4	0.000	1158
Muslim	44.2	28.5	27.3		495
Other	38.1	15.2	46.7		105
No. of ANC visits					
None	45.2	18.8	36.1		352
1-3 visits	54.7	21.0	24.3	0.000	1025
4+ visits	51.5	27.3	21.1		710
Parity					
1	49.5	22.1	28.4		285
2	57.1	21.3	21.6		380
3	50.8	27.7	21.5	0.463	354
4	49.0	25.3	25.7		292
5+	51.7	21.2	27.1		802
Age					
15-24	52.6	23.5	24.0		728
25-34	53.3	23.5	23.3	0.066	923
35-49	48.1	21.5	30.2		503
Kenya	**51.9**	**23.1**	**25.0**		**2113**

Source: Computed from KDHS, 2008/9

Multivariate Analysis

Variables that were found to be statistically associated with the reason for none facility delivery are included in a multivariate regression model. Table 3 shows multivariate logistic regression results for major reasons for a woman not using a facility during delivery. The odds ratios are adjusted for all the variables included in the regression model. Region is significantly associated with all the three major reasons for none facility delivery. Women from Coast and North Eastern regions are 0.3 and 0.2 times less likely to mention economic reasons as a barrier to none facility delivery. Facility related reasons have important influence on the decision to deliver at home in North Eastern, and Rift Valley regions. Controlling for other variables, women in North Eastern region are 4.0 times more likely to state facility related reasons as a major reason for none facility delivery compared to women living in Nairobi.

The influence of region on socio-cultural reasons appears important in Coast and Rift Valley regions compared to other regions. The result shows that women in Coast and Rift Valley regions are 4.3 times and 3.7 times respectively more likely to state cultural reasons as the main barrier to facility delivery compared to women in Nairobi. For economic reasons, transport may not be a problem in Nairobi being an urban centre, but the main reason may relate to the cost of services. For facility-related reasons, North Eastern and parts of Rif Valley regions are in the semi-arid areas of Kenya with poor infrastructure as the main barrier. The other possibility is that the region being occupied mainly by Muslim group may reflect the lack of female providers which both structural in terms of human resource deployment as well as cultural.

As expected, wealth quintile was a significant determinant of none utilization of facility delivery in Kenya. Women from the poorest wealth group are 0.6 times less likely to state economic related reasons as the main barrier to utilization of facility delivery. The effect of wealth group as a predictor of a facility and the cultural-related reason for none facility delivery shows mixed results. Women from richest households are more likely to state facility and cultural related reasons are main barriers to facility delivery than their counterparts from poorest households. However, these relationships are not significant.

The influence of education is significant for all the main reasons for none facility delivery with secondary and above level of education were 0.6 times less likely to state economic barriers compared to those with no education. Our study finds that the main barrier why women who are educated are not likely to use a facility for delivery is due to access. Women with secondary education are 2.6 times more likely to cite facility related reasons. Education also has a significant influence in determining cultural or attitudinal barriers to the utilization of facility delivery. The result shows that women with secondary or higher level of education were 0.6 times less likely to mention cultural/attitudinal barriers to utilization of facility compared to those with no education.

The cultural related reasons are also related to age and marital status. Elderly women, women with higher education or those who were formerly married are less likely to state the cultural-related reasons as a barrier to using a the facility for delivery. The cultural related reasons are also related to age, religion and marital status. Elderly women and women with other types of religion that include no religion and women who were formerly married are more likely to state the cultural-related reasons as a barrier to using the facility for delivery.

The number of the antenatal care visit has a strong relationship with economic and cultural reasons for none utilization of health facility for delivery. The results show that women who attend the antenatal clinic are more likely to cite economic and cultural reasons as barriers to the use of the facility for delivery. However, the magnitude and the direction of the influence are parallel for the two reasons. Women with 4 or more antenatal visits are 1.4 times more likely to mention economic reason and 0.6 times less likely to mention cultural reason compared to women who do not attend.

Table 3: Result of multivariate logistic regression analysis on main reason for none facility delivery[a]

	Economic reasons		Facility reasons		Cultural reasons	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Region						
Nairobi®						
Central	0.668	[0.204-2.188]	1.117	[0.321-3.881]	1.769	[0.585-5.354]
Coast	0.290**	[0.101-0.834]	1.116	[0.371-3.353]	4.341***	[1.544-12.20]
Eastern	1.091	[0.373-3.193]	1.093	[0.332-3.592]	1.248	[0.431-3.612]
Nyanza	0.749	[0.270-2.083]	1.684	[0.578-4.908]	1.022	[0.360-2.903]
Rift Valley	0.464	[0.171-1.257]	0.818	[0.286-2.341]	3.597**	[1.299-9.962]
Western	0.683	[0.234-1.989]	1.048	[0.305-3.605]	2.191	[0.776-6.181]
North Eastern	0.190**	[0.053-0.684]	4.010**	[1.120-14.35]	1.465	[0.482-4.458]
Education						
None®						
primary	0.548***	[0.356-0.845]	1.687	[1.101-2.584]	1.054	[0.777-1.429]
Secondary	0.508**	[0.283-0.909]	2.643***	[1.305-5.352]	0.648*	[0.407-1.033]
Wealth Index						
Poorest®						
Poorer	0.728*	[0.512-1.034]	1.130	[0.747-1.710]	1.200	[0.888-1.621]
Middle	0.758	[0.518-1.110]	0.754	[0.469-1.214]	1.487**	[1.080-2.049]
Richer	0.860	[0.550-1.344]	0.907	[0.520-1.584]	1.095	[0.764-1.570]
Richest	0.584**	[0.343-0.994]	1.408	[0.769-2.578]	1.258	[0.804-1.969]
Marital status						
Never Married®						
Currently	0.688*	[0.430-1.101]	1.406	[0.727-2.718]	0.962	[0.640-1.444]
Formerly	0.903	[0.533-1.530]	1.118	[0.508-2.463]	0.653*	[0.383-1.115]
Religion						
Roman Catholic®						
Protestant	0.860	[0.623-1.189]	0.971	[0.611-1.543]	1.138	[0.837-1.548]
Muslim	0.863	[0.444-1.680]	1.074	[0.551-2.094]	1.210	[0.771-1.900]
Other	0.643	[0.349-1.182]	0.670	[0.301-1.494]	1.855**	[1.105-3.112]
ANC Visit						
None®						
1-3	1.707**	[1.209-2.409]	1.168	[0.670-2.037]	0.489***	[0.364-0.658]
4 +	1.489**	[1.018-2.179]	1.668*	[0.901-3.088]	0.406***	[0.295-0.557]
Age						
15-24®						
25-34	0.936	[0.710-1.235]	1.066	[0.778-1.460]	1.022	[0.796-1.311]
35+	0.877	[0.589-1.307]	0.813	[0.517-1.278]	1.397**	[1.051-1.858]

***P<0.001, ** P<0.05, * P< 0.1, ®-reference category, [a]Odd ratios are adjusted for all other variables in the table

In order further distinguish the aspect of economic reasons, the cost and transport related reasons were further split to provide more insights (Table 4). The association with region is quite evident; Nairobi simply weights the cost as women in other regions less likely to cite cost. The

result indicates that distance or transport issues are more important in other regions other than Nairobi at 95 percent confidence interval. This is because Nairobi is dominantly urban while other regions have expansive rural areas with relatively less developed road infrastructure.

Table 4: Result of multivariate logistic regression analysis on cost and distance as the main reasons for not using facility delivery[a]

	Cost too much		Distance too far/ no transport	
	OR	**95% CI**	**OR**	**95% CI**
Region Nairobi®				
Central	0.303*	[0.076-1.205]	0.707	[0.191-2.624]
Coast	0.233**	[0.069-0.791]	0.359*	[0.107-1.206]
Eastern	0.483	[0.137-1.702]	0.685	[0.196-2.399]
Nyanza	0.397	[0.114-1.380]	0.852	[0.263-2.753]
Rift Valley	0.287**	[0.086-0.957]	0.675	[0.211-2.160]
Western	0.541	[0.149-1.967]	0.770	[0.232-2.551]
North Eastern	0.056***	[0.008-0.384]	0.497	[0.123-1.999]
Education				
None®				
primary	0.746	[0.480-1.159]	0.506***	[0.304-0.842]
Secondary	0.262***	[0.145-0.473]	0.586*	[0.306-1.120]
Wealth Index				
Poorest®				
Poorer	0.951	[0.615-1.470]	0.586***	[0.412-0.834]
Middle	1.005	[0.627-1.609]	0.760	[0.503-1.150]
Richer	0.807	[0.472-1.379]	0.819	[0.532-1.262]
Richest	0.801	[0.366-1.753]	0.478**	[0.244-0.938]
Marital status				
Never Married®				
Currently	0.517**	[0.290-0.921]	1.000	[0.637-1.570]
Formerly	0.773	[0.397-1.506]	0.821	[0.460-1.467]
Religion				
Roman Catholic®				
Protestant	0.785	[0.522-1.179]	0.830	[0.592-1.162]
Muslim	1.032	[0.475-2.240]	0.758	[0.393-1.462]
Other	0.906	[0.409-2.007]	0.787	[0.310-1.998]
ANC Visit				
None®				
1-3	1.065	[0.650-1.745]	1.600***	[1.158-2.212]
4 +	1.061	[0.622-1.809]	1.358	[0.988-1.866]
Age				
15-24®				
25-34	0.868	[0.600-1.255]	0.977	[0.766-1.247]
35+	0.871	[0.520-1.460]	0.802	[0.557-1.156]

***P<0.001, ** P<0.05, * P< 0.1, ns –not significant, ®-reference category, [a]Odd ratios are adjusted for all other variables in the table

Discussion

While many strategies have attempted to address some of the economic, social, and physical factors and barriers contributing to poor maternal health outcomes, women's utilization of skilled delivery services is still not well documented. The general notion is that lack of utilization is often influenced by perceived socio-cultural, economic, and health system factors operating at the community, household, and individual level as well as within the larger social and political environments. However, our results suggest that infrastructure; the cost of services and to some extent cultural factors may be the key barriers to utilization of skilled delivery.

These findings reinforce reports from 2009 Kenya Service Provision Assessment Survey (KSPA)[26]. Reports from focus group discussions held with communities reported that women who delivered at home with the help of traditional birth TBAs reported that the TBAs pampered them. "Most *go to the TBAs because they will pamper them*". However, perceptions of quality of care—including promptness of care, competence of health workers, desire for privacy, perceived availability of equipment, disempowerment, abusive behavior, and friendliness of staff—often influence women's decisions to seek maternal health care [26]. The KSPA report also reported that women fear of doctors and medical examination particularly HIV testing.

An evaluation of interventions to increased skilled attendance in three counties(Kenya, Tanzania, Burkina Faso) in which two districts in Kenya were involved found that the readiness or capacity of a health facility did not appear to strongly influence women's use of that site for delivery care [25]. In all four intervention districts, women who lived close to a site with a "high" Facility Readiness Index score were only slightly more likely to deliver in that facility than women living close to a site with a low Readiness Index score [25]. However, Counseling on birth preparedness during antenatal care also appeared to be strongly associated with skilled care-seeking in both Burkina Faso and Kenya, but not in Tanzania, where care-seeking rates were very high at the outset of the project. Knowledge and awareness of birth complications appeared less important in care seeking, as was exposure to community-level campaigns promoting birth preparedness[25].

Despite the fact that no studies in Kenya have mentioned religion, spirituality, and traditional beliefs as barriers utilization of prenatal and delivery care services, the fact that no increase in

skilled care-seeking was observed in Homa-Bay, Kenya where both supply and demand-related interventions were implemented highlights the complexities of influencing childbirth practices [25]. Our result suggests differentials in the citations of cultural related reasons by type religion. Women with no religion are more likely to state cultural reasons compared to women who are Catholics.

Our result also suggests a relationship between the number of antenatal attendances and non-use of facility for delivery. A significant number of women who attends antenatal care are not using a facility for delivery mainly due to lack of access rather than cost-related reasons. The findings show that the women who attend ANC between 1-3 times are 1.6 times more likely to cite distance or lack of transport as the main reason for none facility delivery. Pfeiffer and Mwaipopo [27] noted that the frequent use of ANC services does not always translate into a health facility delivery in areas where women have to travel a long distance to the nearest facility. In addition, limited public and private transport is an additional barrier to timely and appropriate healthcare. Further studies are required to ascertain whether the utilization of skilled or facility delivery is related to utilization of ANC or the two are independent. For example, does the use of ANC influence the decision to use skilled or facility delivery and vice versa?

Our study has certain limitations. We use KDHS, which is nationally representative data and multivariate methods to identify independent risk factors for none facility delivery. However, it is not possible to predict why are there continued large differentials in the use of facility delivery between the regions and between socio- economic groups. The DHS indicate small differences in those who report that facility delivery is too costly. However, results from DHS may not comprehensively show major reasons for nonuse and therefore further qualitative studies are required to pin point key barriers for policy and program action. Another limitation is related to the retrospective nature with which data on child birth and place of delivery were collected. When data is collected in this manner, there is a possibility of recall bias. To mitigate this challenge, we used data from the most recent birth in the last five years preceding the survey.

In conclusion, it is apparent that economic related reason is an important reason for not delivering at health facilities in many regions in Kenya. However, a significant proportion of women cited the lack of service availability and social and cultural barriers as the major causes

of not delivering at a health facility. The Kenyan Government has rolled out free maternity services, which is hoped to solve economic barriers. Nevertheless, economic incentives such as free maternity services may not significantly improve delivery at health facilities, without improving the health system and removing the social and cultural barriers. Furthermore, a significant proportion of women consider that the delivery at a health facility is not necessary. There s a need for improving women's knowledge about obstetric risks.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

GO participated in the study conception, reviewed literature, performed the statistical analysis and drafted the manuscript. **AA** conceived the study and contributed to statistical analysis and drafting of the manuscript. **AK** contributed to study conception, conducted literature reviews and drafting of the manuscript.

All authors read and approved the final manuscript.

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